

## Position paper

# Balancing between biodiversity, carbon sequestration and the use of forest resources: **No simple solutions**

### Key messages

#### **Boreal, temperate and Mediterranean forests and forest dynamics are not similar**

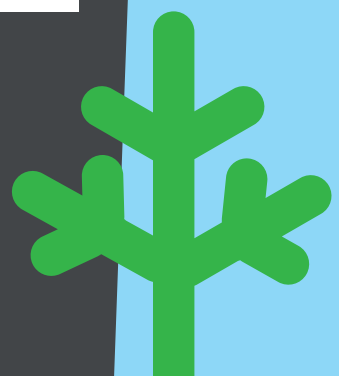
→ Management strategies need to vary between European regions, due to great differences between forests, forest structures, climatic conditions, and the use of forests in rural areas.

#### **National Forest Inventories offer a framework and solutions for forest monitoring and strategic planning at European level**

→ Solutions for harmonized forest data and information are already under development.

#### **The substitution effects of the use of wood are not fully recognized in the New EU Forest Strategy for 2030**

→ Active forest management and sustainable use of forests are parts of the solution in the green transition.



## Boreal, temperate, and Mediterranean forests and forest dynamics are not similar

Both the EU Biodiversity Strategy for 2030 and the New EU Forest Strategy for 2030 call for developing climate and biodiversity-friendly practices, such as closer-to-nature (CtN) forest management.<sup>1</sup> **Forest management strategies need to vary between European regions, due to great differences between forests, forest structures, climatic conditions, and the use of forests in rural areas.**

Our review<sup>2</sup> of the Finnish forest legislation, certification, and management guidelines shows that CtN practices are widely recognised in Finnish forestry guidelines and legislation. **These practices are applied in a cross-cutting manner today in all forest management. Their use enables seeking to balance between sustainable use of natural resources, biodiversity, and carbon sequestration.**

In Finland, the forest owners, including 600 000 non-industrial private forest owners can freely decide on their forest management strategy. In Europe, there are 16 million forest owners and decision-makers. **This implies that the CtN practices need to be present in all the applied forest management measures in a way that is feasible to individual forest owners.**

Several biodiversity relevant key indicators show positive development in the forests of Finland<sup>3</sup>. However, we need to do better in the future<sup>4</sup>. Especially, the strong decline in the area of prescribed burnings needs attention. **When new forest management practices are introduced through policies, it is vital to monitor their success and impacts, considering all the different aspects of sustainability.**

## European forest monitoring - 500 000 sample plots with remote sensing is a solution

The new EU Forest Strategy recognises the need to develop a European forest monitoring system and to develop strategic forest planning in all the Member States. Out of the 27 MSs, 23 have an ongoing national forest inventory (NFI). The NFIs can support establishing the European forest monitoring and strategic forest planning in several ways.

1. **The NFIs provide more than 500,000 field plots that produce relevant forest information on a regular basis.** NFIs form a unique forest data infrastructure for Europe. The information collected in the forests include parameters related to forest biomass, growth of forests, tree species, condition of forests and forest biodiversity, forest carbon, and land use changes.

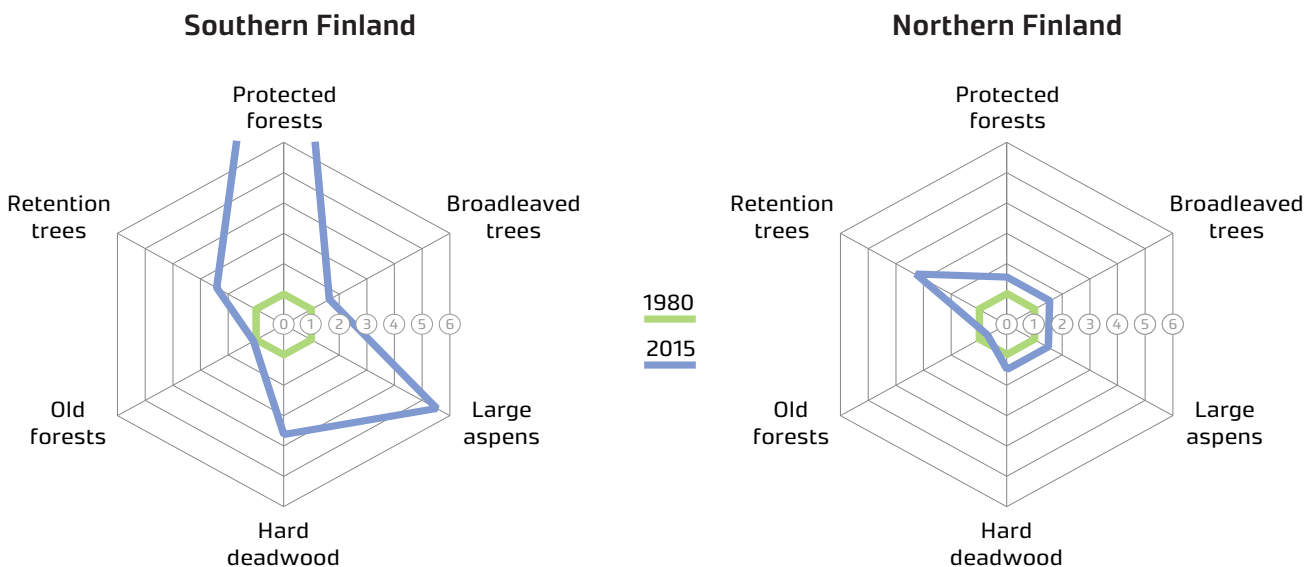


Fig. 13. Development of those forest biodiversity relevant forest variables that can be derived from old and current National Forest Inventory data. Each variable scaled at value 1 for 1980 (green line) and the blue line shows the relative change by 2015.

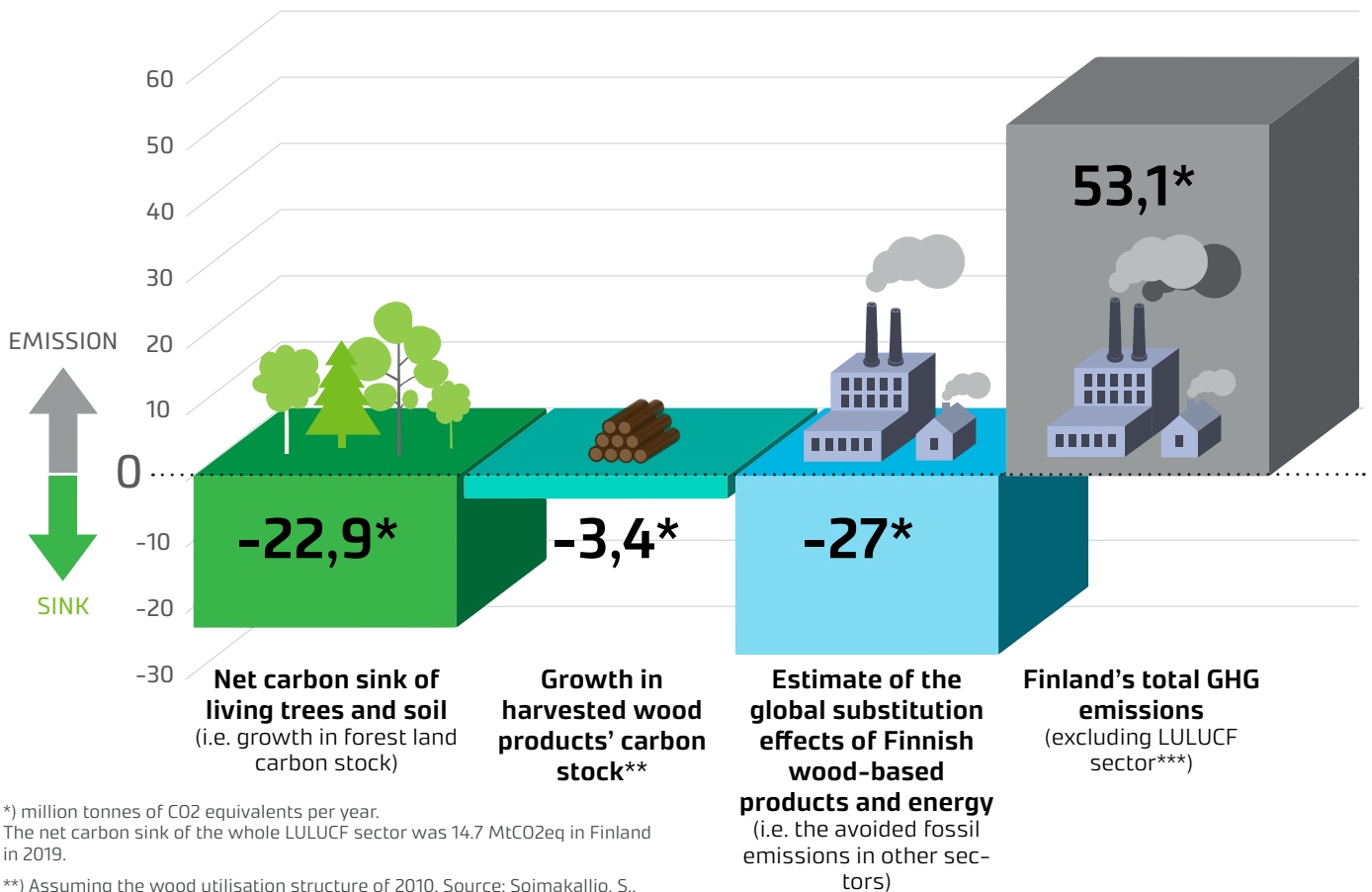
2. **The European-wide network of forest monitoring specialists and scientists, ENFIN, develops solutions for harmonized forest data and information at European level**, and has published more than 40 peer reviewed papers on this theme ([www.enfin.info](http://www.enfin.info)).
3. **Cost-efficient methodologies to combine NFI and remote sensing data exist.**
4. **NFIs can offer a framework and solutions for strategic planning at European level.** NFIs, in cooperation with the European Commission's Joint Research Centre (JRC), have developed EFDM, a scenario modeling tool for European scale applications<sup>5</sup>.

## Raising target for LULUCF net removals and saturating forest carbon sink

The proposed revision of regulation raises ambition for increasing the LULUCF net removals with a binding EU level target of -310 MtCO<sub>2</sub>eq in 2030. The Commission also proposes a simplification of LULUCF accounting rules reflecting the complexity of determining the forest reference levels (FRLs) under the current regulation. As a positive outcome, the cumbersome FRL exercise produced a wealth of information on MSs' forests and forestry while evidencing that given the age structure and associated forest management practices, the EU's forest carbon sink is declining.

The saturation of forest carbon sink in the EU was already noticed about a decade ago<sup>6</sup>. The ageing of forests and deforestation were identified as the drivers. In the short term, harvesting volumes affect the forest carbon sink, yet active forestry, and

Fig. 2. GHG emissions and the role of forests and harvested wood products in the carbon balance of Finland in 2019



\*) million tonnes of CO<sub>2</sub> equivalents per year. The net carbon sink of the whole LULUCF sector was 14.7 MtCO<sub>2</sub>eq in Finland in 2019.

\*\*) Assuming the wood utilisation structure of 2010. Source: Soimakallio, S., Saikku, L., Valsta, L. & Pingoud, K. 2016. Climate Change Mitigation Challenge for Wood Utilization: The Case of Finland. *Environmental Science and Technology*. 2016, 50 (10), 5127-5134.

\*\*\*) Emissions from the forest industries are included in total emissions but have been deducted from the estimate of substitution effects.

Source: Ministry of Agriculture and Forestry of Finland. <https://mmm.fi/documents/1410837/22836561/Metsien+rooli+ilmastonmuutoksen+hillinnassa.pdf/b8b48104-a90c-ed4d-647d-8982f8f507d5/Metsien+rooli+ilmastonmuutoksen+hillinnassa.pdf?t=1631803653503>

more widely the sustainable use of forest resources, is essential in regulating the forest damage risks and strengthening forests' resilience to changing climate while providing raw material for circular bioeconomy.

The Commission's "Fit for 55" package has sparked a debate on the balance between different targets, and whether the use of wood is a source of problems instead of an enabler of the green transition. For example, **the substitution effects of the use of wood are underestimated in the New EU Forest Strategy for 2030.** The given range of -18 to -43 MtCO<sub>2</sub>e/year for the whole EU is comparable to the substitution effects of wood-based goods and energy produced in Finland alone (Fig. 2). The IPCC accounting rules do not consider substitution effects explicitly and their estimation is a complex task with uncertainties. Yet, their magnitude should be recognised to avoid policy measures with potentially adverse outcomes.

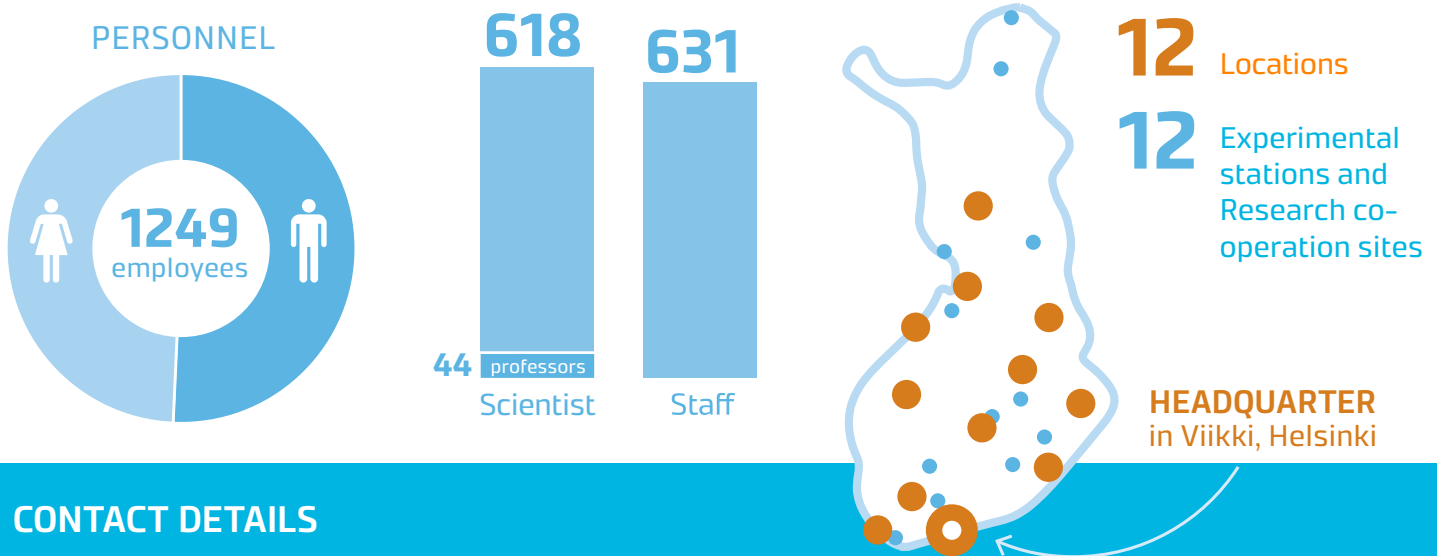
References:

1. Bauhus et al. 2013. <https://doi.org/10.4324/9780203122808>
2. Korhonen et al. 2021. <http://urn.fi/URN:ISBN:978-952-380-314-5>
3. Korhonen et al. 2020. <https://doi.org/10.14214/ma.10198>.
4. Siitonen et al. 2020. <http://urn.fi/URN:ISBN:978-952-380-056-4>
5. Vauhkonen et al. 2019. <https://doi.org/10.1007/s13595-019-0863-6>
6. Nabuurs et al. 2013. <https://doi.org/10.1038/nclimate1853>

## Renewable forest energy in the EU - Enhanced efficiency and the role in transition to green economy

With a 60% share of consumption, bioenergy is currently the major source of renewable energy in the EU, while wind, solar, and geothermal energy are the fast-growing alternatives. At best, the role of bioenergy is highly complementary with wind and solar energy and will continue to provide the bulk of heating and transport fuels for decades to come. Bioenergy, will eventually contribute to balancing the electricity grid, including bioenergy as one form of stored solar energy.

Investing in new, resource efficient processes hold significant potential in increasing both the production and the value of the existing resource use. Because the biomass supply for bioenergy is huge, ca. 140 Mtoe/a, 1% efficiency improvement can increase the energy outputs by 1,4 Mtoe in the EU. The efficiency of bioenergy generation and use as a separate process and as a part of the entire energy system needs to be a focus area in the EU's renewable energy and climate policies.



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